

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A communication system comprising:
a medical device having a communication module;
a two-way communication network; and
a remote monitoring service,

wherein the remote monitoring service is configured to send a communication to the medical device using the two-way communication network, the communication including an instruction for the medical device to perform a status assessment of at least one medical device parameter when the medical device is not in use, and wherein, in response to receiving the communication, the medical device is configured to obtain status assessment information and send a return communication back to the remote monitoring service using the two-way communication network, the return communication including the status assessment.

2. The system as recited Claim 1, wherein the medical device is a portable defibrillator.

3. The system as recited in Claim 1, wherein the two-way communication network includes a wireless communication network.

4. The system as recited in Claim 3, wherein the two-way communication wireless network includes a specialized mobile radio network.

5. The system as recited in Claim 1, wherein the two-way communication network includes a two-way paging network.

6. The system as recited in Claim 1, wherein the two-way communication network includes a wired digital data network.

7. The system as recited in Claim 1, wherein the medical device comprises:

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a controller with a memory;

a two-way communication module coupled to the controller,

wherein the controller and two-way communication module are configured to receive and process communications sent to the medical device by the remote monitoring service over the two-way communication network and further configured to send return communications to the remote monitoring service over the two-way communication network..

8. The system as recited in Claim 1, wherein the remote monitoring service comprises:

a control unit, wherein in the control unit is configured to selectively initiate a communication to the medical device using the two-way communication network;

an interface coupled to the control unit, wherein the interface is configured to support communication between the control unit and the two-way communication network; and

a user interface having a display coupled to the control unit, the user interface being configured to support transfer of information between a user and the control unit.

9. The system as recited in Claim 1, wherein the status assessment is a medical device power supply voltage level.

10. A communication system comprising:

a medical device having a communication module;

a two-way communication network; and

a remote monitoring service,

wherein the remote monitoring service is configured to send a communication to the medical device using the two-way communication network, the communication including software update information to update software stored in the medical device, and wherein, in response to receiving the communication, the

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medical device is configured to update the software stored in the medical device in response to receiving the software update information.

11. The system as recited Claim 10, wherein the medical device is a portable defibrillator.

12. The system as recited in Claim 10, wherein the two-way communication network includes a wireless communication network.

13. The system as recited in Claim 10, wherein the two-way communication network includes a wired communication network.

14. The system as recited in Claim 10, wherein the medical device is further configured to send a return communication once the software update has been complete.

15. A method for a remote monitoring service to communicate with a medical device using a two-way communication network, the method comprising:

initiating a communication from the remote monitoring service to the medical device using the two-way communication network, the communication including an instruction by the remote monitoring service for the medical device to perform a status assessment of at least one medical device parameter when the medical device is not in use;

receiving the communication in the medical device;

performing the status assessment of the at least one medical device parameter in response to receiving the communication in the medical device; and

sending a return communication from the medical device to the remote monitoring service using the two-way communication network, the message including the requested status assessment.

16. The method as recited in Claim 15, wherein the medical device is a portable defibrillator.

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17. The method as recited in Claim 15, wherein the two-way communication network includes a wireless communication network.

18. The method as recited in Claim 17, wherein the two-way communication wireless network includes a wireless local area network.

19. The method as recited in Claim 17, wherein the two-way communication wireless network includes a digital personal communication service network.

20. The method as recited in Claim 15, wherein the two-way communication network includes a two-way paging network.

21. A method for a remote monitoring service to communicate with a medical device having software using a two-way communication network, the method comprising:

initiating a communication from the remote monitoring service to the medical device using the two-way communication network, the communication including software update information to update software stored in the medical device;

receiving the communication in the medical device;

performing a software update with the software update information in response to receiving the communication in the medical device.

22. The method as recited in Claim 21 further comprising sending a return communication from the medical device to the remote monitoring service utilizing the two-way communication network, wherein the return communication includes information about the software update has been completed.

23. The method as recited in Claim 21, wherein the medical device is a portable defibrillator.

24. The method as recited in Claim 21, wherein the two-way communication network includes a wireless communication network.

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25. The method as recited in Claim 24, wherein the two-way communication wireless network includes an analog cellular telephony network.

26. The method as recited in Claim 21, wherein the two-way communication network includes a two-way paging network.

27. The method as recited in Claim 21, wherein the two-way communication network includes a specialized mobile radio network.

28. A defibrillator comprising:

a power source;

a charging circuit coupled to the power source;

an energy storage device coupled to the charging circuit;

an output circuit coupled to the energy storage device;

a pair of electrodes coupled to the output circuit;

a two-way communication module; and

a controller having a memory coupled to the two-way communication module, charging circuit and the output circuit, wherein the controller is configured to selectively cause the charging circuit to transfer energy from the power source to the energy storage device and to cause the output circuit to transfer energy from the energy storage device to the electrodes, and

wherein the controller is further configured to operate the two-way communication module to (i) receive a communication from a remote monitoring service via a two-way communication network, the communication including an instruction for the medical device to perform a status assessment of at least one medical device parameter when the medical device is not in use, and (ii) send a communication to the remote monitoring service via the two-way communication network, the communication including the requested status assessment information.

29. The defibrillator as recited in Claim 28, wherein the two-way communication network includes a wireless communication network.

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30. The defibrillator as recited in Claim 29, wherein the two-way communication wireless network includes a non-licensed ISM-service network.

31. The defibrillator as recited in Claim 28, wherein the two-way communication network includes a fiber-optic network.

32. The defibrillator as recited in Claim 28, wherein the two-way communication network includes a digital data network.

33. The defibrillator as recited in Claim 28, wherein the medical device parameter includes software version information.

34. A defibrillator comprising:

a power source;

a charging circuit coupled to the power source;

an energy storage device coupled to the charging circuit;

an output circuit coupled to the energy storage device;

a pair of electrodes coupled to the output circuit;

a two-way communication module; and

a controller having a memory coupled to the two-way communication module, charging circuit and the output circuit, wherein the controller is configured to selectively cause the charging circuit to transfer energy from the power source to the energy storage device and to cause the output circuit to transfer energy from the energy storage device to the electrodes, and

wherein the controller is further configured to operate the two-way communication module to receive a communication from a remote monitoring service via a two-way communication network, the communication including software update information to update software stored in the controller memory, and

wherein the controller is further configured to perform the software update with the software update information in the communication.

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35. The defibrillator as recited in Claim 34, wherein the controller is further configured to operate the two-way communication module to send information about the software update.

36. The defibrillator as recited in Claim 34, wherein the two-way communication network includes a wireless communication network.

37. The defibrillator as recited in Claim 34, wherein the two-way communication network includes a wired communication network.

38. A defibrillator comprising:
a power source;
a charging circuit coupled to the power source;
an energy storage device coupled to the charging circuit;
an output circuit coupled to the energy storage device;
a pair of electrodes coupled to the output circuit;
a two-way communication module;

defibrillator control means for selectively causing the charging circuit to transfer energy from the power source to the energy storage device and to cause the output circuit to transfer energy from the energy storage device to the electrodes; and

communication module control means, coupled to the two-way communication module, for receiving and processing a communication from a remote monitoring service via a two-way communication network, the communication including an instruction for the defibrillator to perform a status assessment of at least one defibrillator parameter when the defibrillator is not in use, and for sending a communication to the remote monitoring service via the two-way communication network, the communication including the requested status assessment information.

39. The defibrillator as recited Claim 38, wherein a processor and a memory are used to implement the defibrillator control means and communication module control means.

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40. The defibrillator as recited in Claim 38, wherein the two-way communication network includes a wireless communication network.

41. The defibrillator as recited in Claim 38, wherein the two-way communication network includes a wired communication network.

42. The defibrillator as recited in Claim 38, wherein the status assessment includes counter information indicating a number of times the defibrillator has been utilized.

43. A defibrillator comprising:
a power source;
a charging circuit coupled to the power source;
an energy storage device coupled to the charging circuit;
an output circuit coupled to the energy storage device;
a pair of electrodes coupled to the output circuit;
a two-way communication module;

defibrillator control means for selectively causing the charging circuit to transfer energy from the power source to the energy storage device and to cause the output circuit to transfer energy from the energy storage device to the electrodes; and

communication module control means, coupled to the two-way communication module, for receiving and processing a communication from a remote monitoring service via a two-way communication network, the communication including software update information,

wherein the defibrillator control means further includes means for updating defibrillator software with the software update information included in the communication.

44. The defibrillator as recited in Claim 43, wherein the communication module control means further includes means for sending a communication to the remote monitoring service via the two-way communication network, the

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communication including information about the updating of the defibrillator software.

45. The defibrillator as recited in Claim 43, wherein a processor and a memory are used to implement the defibrillator control means and communication module control means.

46. The defibrillator as recited in Claim 43, wherein the two-way communication network includes a wireless communication network.

47. The defibrillator as recited in Claim 43, wherein the two-way communication network includes a wired network.

48. A communication device for use in conjunction with a medical device, a two-way communication network and a remote monitoring service, the communication device comprising:

a controller; and

a two-way communication circuit coupled to the controller,

wherein in response to a communication from the remote monitoring service using the two-way communication network, the communication including an instruction for the medical device to obtain a status assessment of at least one medical device parameter when the medical device is not in use, the communication device is configured to obtain the requested information from the medical device and send a return communication back to the remote monitoring service using the two-way communication network, the return communication including the status assessment requested information.

49. The communication device as recited Claim 48, wherein the communication circuit is in a separate unit external to the medical device, the separate unit being configured to be selectively coupled to the medical device.

50. The communication device as recited in Claim 48, wherein the two-way communication network includes a wireless communication network.

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51. The communication device as recited in Claim 48, wherein the two-way communication network includes a wired communication network.

52. A communication device for use in conjunction with a medical device having software, a two-way communication network and a remote monitoring service, the communication device comprising:

a controller; and

a two-way communication circuit coupled to the controller,

wherein in response to a communication from the remote monitoring service using the two-way communication network, the communication including software update information for the medical device, the communication device is configured to instruct the medical device to perform a software update.

53. The communication device as recited Claim 52, wherein the communication circuit is in a separate unit external to the medical device, the separate unit being configured to be selectively coupled to the medical device.

54. The communication device as recited in Claim 52, wherein the communication device is further configured to send a return communication from the medical device about the software update.

55. The communication device as recited in Claim 52, wherein the medical device is a defibrillator.

56. The communication device as recited in Claim 52, wherein the two-way communication network includes a wireless communication network.

57. The communication device as recited in Claim 52, wherein the two-way communication network includes a wired communication network.

58. A communication system comprising:

a medical device having a two-way communication module;

a communication network;

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a remote monitoring service;

wherein the remote monitoring service is configured to send a communication to the medical device via the communication network using a first communication medium, the communication including a request for information from the medical device; and

wherein in response to receiving a communication, the medical device is configured to obtain the requested information and send a return communication to the remote monitoring service via the communication network utilizing a second communication medium, wherein the first and second communication mediums are different.

59. The system as recited in Claim 58, wherein the medical device is a portable defibrillator.

60. The system as recited in Claim 58, wherein the communication from the remote monitoring service includes an instruction for the medical device to perform a self-test, and wherein the medical device is configured to perform the requested self-test in response to the instruction.

61. The system as recited in Claim 58, wherein the communication from the remote monitoring service includes an instruction for the medical device to perform a status assessment of at least one medical device parameter when the medical device is not in use, and wherein in response to receiving the communication, the medical device is configured to obtain the requested communication and send a return communication to the remote monitoring service.

62. The system as recited in Claim 58, wherein the communication from the remote monitoring service includes configuration information to update a software configuration of the medical device, and wherein the medical device is configured to update its software configuration in response to receiving the configuration information.

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63. The system as recited in Claim 58, wherein the communication from the remote monitoring service includes software update information to update software stored in the medical device, and wherein, in response to receiving the communication, the medical device is configured to update the software stored in the medical device in response to receiving the software update information.

64. The system as recited in Claim 58, wherein the medical device is further configured to autonomously obtain medical device information and send a return communication to the remote monitoring service using the communication network, the return communication including the medical device information, the medical device information including self-test, status assessment or configuration information.

65. The system as recited in Claim 58, wherein the medical device further includes:

a controller with a memory;

a two-way communication module coupled to the controller;

wherein the controller and the two-way communication module are configured to receive and process communication sent to the medical device by the remote monitoring service over the communication network and further configured to send return communications to the remote monitoring service via the communication network utilizing the second communication method.

66. The system as recited in Claim 58, wherein the remote monitoring service comprises:

a control unit, wherein the control unit is configured to selectively initiate a communication to the medical device using the communication network;

an interface coupled to the control unit wherein the interface is configured to support communication between the control unit and the communication network;
and

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a user interface having the display coupled to the control unit, user interface being configured to support the transfer of information between a user and a control unit.

67. The system as recited in Claim 58 further comprising a location or navigation subsystem coupled to the controller, wherein the controller and the location or navigation subsystem are configured to provide information indicative of a location of the medical device to the remote monitoring service using the communication network.

68. The system as recited in Claim 67, wherein the location or navigation subsystem is a global positioning system module.

69. The system as recited in Claim 1, wherein the medical device comprises a independent subsystem, the independent system including a two-way communication module, and wherein the requested information is related to the status of the independent subsystem.

70. The system as recited in Claim 68, wherein the independent subsystem comprises a battery for providing power to the medical devices.

71. The system as recited in Claim 58, wherein the remote monitoring service is configured to send a communication to the medical device by communicating with the communication network through a data network.

72. The system as recited in Claim 58, wherein the remote monitoring service configured to send a communication to the medical device by communicating with the communication network through a wireless network.

73. The system as recited in Claim 1, wherein the medical device is configured to send a communication to the remote monitoring service by communicating with the communication network through a wireless network.